CLAIMS

What Is Claimed Is:

1. In an implantable cardiac stimulation device for implant within a patient, a system comprising:

a pacing unit operative to deliver primary pacing pulses and backup pacing pulses to the ventricles of the heart;

a capture detection unit operative to detect loss of capture of both primary pacing pulses and backup pacing pulses in the ventricles; and

a capture-based ventricular tachycardia detection unit operative to detect a ventricular tachycardia based upon loss of capture of a ventricular backup pulse as detected by the capture detection unit.

2. The system of claim 1 wherein the pacing unit delivers pacing pulses at a pulse magnitude less than a predetermined maximum pulse magnitude and delivers a backup pulse at the maximum pulse magnitude upon detection of a loss of capture of a primary pacing pulse.

3. The system of claim 1 further comprising:

a stimulation threshold search unit operative to determine a ventricular capture threshold for primary pacing pulses.

4. The system of claim 3 wherein the stimulation threshold search unit is activated if a programmable number of consecutive pacing pulses do not capture but corresponding backup pulses do capture.

5. The system of claim 4 wherein the stimulation threshold search unit is activated if a first predetermined number of pacing pulses do not capture within a second predetermined number of delivered pulses.

6. The system of claim 1 further comprising:

an shock therapy unit operative to deliver shock therapy to the ventricles upon the detection of tachycardia by the tachycardia detection unit.

7. The system of claim 6

wherein the pacing until is controlled to provide preventive overdrive pacing whenever a ventricular tachycardia is not detected and wherein the shock therapy unit is controlled to deliver shock therapy to the ventricles upon detection of a ventricular tachycardia.

8. In an implantable cardiac stimulation device having a pacing unit and capture detection unit for implant within a patient, a method comprising:

delivering primary pacing pulses to the ventricles of the heart;

verifying capture of the primary pacing pulses;

delivering a backup pulse to the ventricles of the heart upon detection of a loss of capture of a primary pacing pulse;

verifying capture of the ventricular backup pacing pulses;

detecting a ventricular tachycardia based upon detection of loss of capture of a backup pulse in the ventricles as detected by the capture detection unit.

9. The method of claim 8 wherein delivering primary pacing pulses is performed to deliver pulses at a pulse magnitude less than a predetermined maximum pulse magnitude and wherein delivering a backup pulse is performed to deliver the backup pulse at the maximum pulse magnitude.

10. The method of claim 8 wherein the stimulation device comprises a stimulation threshold search unit operative to determine a capture threshold for pacing pulses and wherein the method further comprises:

performing a stimulation threshold search using the stimulation threshold search unit if a primary pacing pulse is not captured but a backup pulse is captured.

11. The method of claim 10 wherein delivering primary pacing pulses to the heart is performed in accordance with preventive overdrive pacing.

12. The method of claim 8 wherein the stimulation device comprises a shock therapy unit operative to deliver shock therapy to the ventricles and wherein the method further comprises:

delivering shock therapy to the ventricles if both a primary pacing pulse and a backup pulse are not captured in the ventricles.

13. In an implantable cardiac stimulation device for implant within a patient, a system comprising:

means for delivering primary pacing pulses to the ventricles of the heart;

means for verifying capture of the primary pacing pulses;

means for delivering a backup pulse to the ventricles of the heart upon detection of a loss of capture of a primary pacing pulse; and

means for verifying capture of the ventricular backup pacing pulses; and

means for detecting a ventricular tachycardia based upon loss of capture of a ventricular backup pulse.